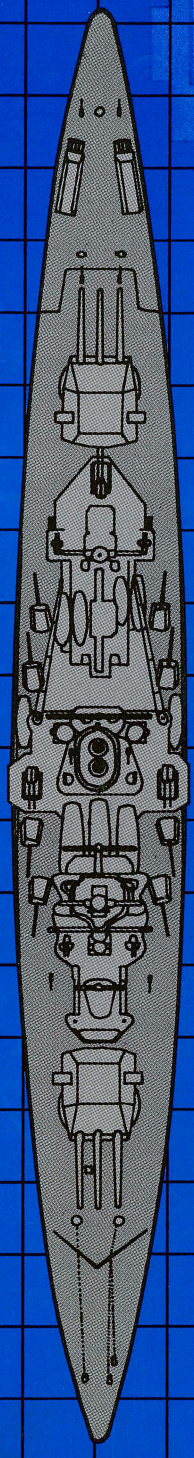
PURSUIT OF THE GRAF SPEE™

A COMPUTER STRATEGY SIMULATION OF WORLD WAR II'S FIRST GREAT NAVAL BATTLE



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1.0 INTRODUCTION

Pursuit of the Graf Spee is a strategic game that allows the players to recreate the historic search for the German pocket battleship, Graf Spee in late 1939. This search ultimately led to the Battle of the River Plate which sealed the fate of the German warship.

In the game, players will control individual ships moving on a map of the South Atlantic.

1.1 Starting a game (DOS 3.2 or DOS 3.3)

To begin a game; boot your disc (insert the disc in drive one and turn on your computer) and the game will begin automatically. If you are using an Apple II with PASCAL, you must use your BASICS disc. If you are using an Apple III, you must first go into Apple II Emulation Mode.

1.2 Saving a Game

At the end of each turn the player(s) will be asked if they wish to save the game in progress. If you choose to save the game, you will need a scratch disc to store the data. The scratch disc must be initialized for SSI use by following the instructions included in the program. Once the game is saved, you will able to restart it from the point at which you left off.

2.0 GENERAL DESCRIPTION

2.1 Parts Inventory

A. Box
B. Battle Manual
C. 5 ¼" Game Disk
D. Two Ship Data Cards

2.2 Definition Of Terms

2.2.1 Damage level — A percentage rating of the amount of battle damage a ship has incurred. A value of 0% indicates no damage, while a value of 100% indicates that the ship has been sunk.
2.2.2 Fuel — The amount of oil in a ship's oil tanks, it is expended during the movement of a ship.
2.2.3 Shadow — The act of following an enemy ship.
2.2.4 Visibility level — A measure of the severity of the weather. The map is given one visibility level each turn. The levels are 1 = calm seas, 2 = rough seas, 3 = stormy seas.

2.3 Mapboard Codes

Each ship is given a one letter ID which identifies the location of the ship on the mapboard. British ports are indicated by a red anchor, while neutral ports are indicated by a white anchor.

2.4 Mapboard Coordinates

To read the map coordinates first read the row number and then the column number. *Example: Capetown is on row 22 and column 28, and thus it is considered to be at square 2228.*

3.0 SEQUENCE OF PLAY

Each scenario is played by repeating a series of game-turns. Each game-turn consists of the seven major parts listed below. The parts are listed in their order of occurrence during a game-turn.

3.1 Shadow Phase

During this phase the computer will alert you if you have spotted the Graf Spee, and if so allow you to attempt to shadow. If a shadow is attempted the German player will be asked to move the Graf Spee.

3.2 Order Entry Phase

3.2.1 British Orders Phase

The British player secretly enters his orders to his ships.

3.2.2 German Orders Phase

The German player (or the computer) secretly enters his orders to his ships.

3.3 Computer Activity Phase

3.3.1 Ship Movement Phase

The computer obeys the players' orders and moves all units to their new positions, while updating the fuel status of each ship.

3.3.2 Search Phase

The computer checks for the spotting of enemy ships and alerts the players of any sightings.

3.4 Combat Phase

If ships have been spotted, combat may occur in the following order:

1. Attacks by the Graf Spee on unescorted aircraft carriers.
2. Aircraft attacks from the Ark Royal and/or Hermes.
3. Surface Combat.

The players conduct combat while the computer resolves the attacks, records damage, calculates withdrawals.

3.5 Merchant Ship Spotting Phase

The computer determines whether any enemy merchant ships have been spotted and sunk and whether the merchant ship was able to send a radio message of its location before it was sunk.

3.6 Victory Determination Phase

If both the Altmark and the Graf Spee have been sunk, or it is the December 25 PM turn, the game will end and the final victory point totals for each side will be displayed. The British player will now have an opportunity to display the paths taken by the German ships during the game.

3.7 Save The Game Option

At this time the players may save a game in progress for resumption at a later date. *Note: After a game has been saved, the player's may continue to play.*

4.0 GENERAL COMMANDS

4.1 After the player has entered his password, the locations of his ships are displayed on the computer screen. The computer will ask the player to enter a general command.

4.2 O = Order Ships. Allows the player to give orders to his ships as described in section 5.0.

4.3 P = Patrol (British Player Only). Places all British ships into patrol mode.

4.4 L # # # # = List Ships (British Player Only). Lists the ships in square # # # #.

4.5 S = Order a Single Ship. Allows the player to give orders to any one of his ships.

4.6 C = Check ship status. This command allows the player to look at the status of any of his combat ships.

4.7 F = Finished. This command ends the player's order entry phase.

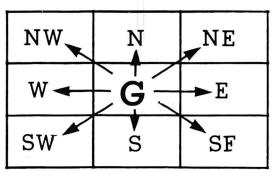
4.8 E = End game. This command will end the game. The game will go directly to the victory determination phase.

5.0 SHIP COMMANDS AND CAPABILITIES

5.1 During each order entry phase the player may order any, all, or none of his ships to move. The "O" command is used to get to the "Order Ships" section of the program. When this is done the computer displays one ship at a time and asks for a movement command. The "O" command can be given as many times as the player wishes to until the player is satisfied with the orders given The "S" command may also be given as many times as desired.

5.2 Movement Commands

5.2.1 N = Move one square north.
5.2.2 NE = Move one square northeast.
5.2.3 E = Move one square east.
5.2.4 SE = Move one square southeast.
5.2.5 S = Move one square south.
5.2.6 SW = Move one square southwest.
5.2.7 W = Move one square west.
5.2.8 NW = Move one square northwest.



5.2.9 P = Patrol Mode. Do not move the ship this turn. If this ship is in port then it automatically refuels and attempts to repair any damage (the Graf Spee will attempt to refuel if in the same hex as the Altmark).
5.2.10 A ship that is not ordered will continue to execute the last order it was given.

5.3 Legal Squares For Ships

5.3.1 British ships may move into and out of any all-Sea square on the map and into and out of any port.

5.3.2 German ships may move into and out of any All-Sea square and into and out of any port, however, if a German ship enters a British port than it is automatically sunk.

5.3.3 A ship will automatically be given a P order if it is ordered to enter any hex which it is not allowed to enter.

5.3.4 The Altmark may exit off the north edge of the board if it moves north while on row 11. If the Altmark exits it may not return to the game.

5.4 The Ship Detail Line is the line of text displayed by the computer when the player is ordering his ships. Below is the Ship Detail Line for the British battlecruiser Renown used as an example.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
R	RENOWN	1420	29	000%	100	20	SW

(1) Ship Code
(2) Name
(3) Square the ship is in at the beginning of the turn.
(4) Maximum speed in knots.
(5) Damage Level
(6) Victory Points
(7) Fuel Remaining
(8) Current Orders

5.5 Ship Movement And Fuel

All ships with a maximum speed of at least 1 knot may move one square on AM turns. All ships with a maximum speed of at least 20 knots may move one square on PM game turns.

5.5.1 All ships lose one fuel factor on AM turns (irregardless of movement).

5.5.2 Ships which move on PM turns lose three fuel factors. Ships in patrol mode do not expend fuel during PM numbered turns.

5.6 When a ship's remaining fuel reaches 0 the ship may only move on AM turns and may not shadow. For each turn a ship spends at sea without fuel, the opposing player receives one victory point. A ship which has 1 or 2 fuel factors remaining may move on a PM turn, but would end the turn with 0 fuel remaining.

6.0 SEARCH: HOW TO FIND THE ENEMY

6.1 During the computer search phase the computer judges whether opposing ships have spotted each other. The computer uses the number of British ships in a square and the weather conditions to determine if German ships have been sighted.

6.2 The computer uses the following formula to determine whether German ships are spotted by British ships in the same square:
% chance of spotting = $1 - \{.1 \times [(3 \times \text{visibility level}) - (.4 \times \text{number of British ships in the square})] \}$

6.3 Each turn a new visibility level (VL) is selected and displayed on the upper right hand corner of the map. There is a 30% chance of calm seas (VL = 1), a 30% chance of rough seas (VL = 2), and a 40% chance of stormy seas (VL = 3).

6.4 Spotting is considered to be mutual. All ships in a square are spotted by both players as soon as the British have successfully spotted a German ship.

6.5 Players will only be given information about enemy ships that are spotted. Thus the British player will not see the German ships displayed on his mapboard until he actually spots a ship. Once the Graf Spee is spotted it will appear on the British player's mapboard. British ships will never be displayed on the German player's mapboard.

6.6 For search purposes (only) the Ark Royal is considered to be three ships, and the Hermes is considered to be two ships (this is due to their aircraft).

6.7 Ships in patrol mode are considered to be three ships for search purposes (Ark Royal in patrol equals nine, Hermes inpatrol equals six).

6.8 The probability of spotting the Altmark is 30% less than the probability derived from the formula in 6.2 above. The Altmark could easily be mistaken for a British merchant ship.

7.0 SHADOW

7.1 If the Graf Spee has been spotted and the British player wishes to maintain contact with it (shadow) the computer will allow him to do so during the shadow phase of each turn. The ships involved will be displayed on the screen and the computer will ask the German player to secretly give orders to the Graf Spee. The computer will then calculate the results and report "SHADOW SUCCEEDED" or "SHADOW FAILED", and if succeeded will give the direction of the Graf Spee's movement. If shadowed, the Graf Spee may not be given orders during the next German order entry phase, but in place of this it will execute the orders just entered.

7.2 Shadow Resolution. The computer uses the following formula to determine the results of a potential shadow:
probability of successful shadow = (3 + # of ships attempting to shadow − VL) /6

7.3 The Ark Royal and the Hermes may not be used to shadow the Graf Spee and are not counted when using the formula given above.

7.4 A successful shadow does not guarantee that the Graf Spee will be spotted during the next search phase.

7.5 Only ships with a current maximum speed equal to or greater than the current maximum speed of the Graf Spee may attempt to shadow.

8.0 SOLITAIRE

When playing solitaire the computer will make all of the decisions for the German navy. All normal rules apply during solitaire.

9.0 LOCATING MERCHANT SHIPS

9.1 Each turn the British player has a chance of spotting a German merchant ship. The probability is based on the number of British ships in patrol mode; ½% chance for each ship in patrol mode. There is a 50% chance that the German ship is able to radio its last position and the name of one of its attackers.

9.2 British shipping lanes are indicated on the mapboard with white dots. Nine dots in a square represents the areas with the largest amount of ship traffic, three dots in a square represents medium traffic areas, and one dot represents light traffic areas. The Graf Spee has a 45% chance of sighting and sinking a British merchant ship in the highest density areas, a 25% chance in the medium traffic areas, and a 5% chance in the light density areas. The Graf Spee also has a 1% chance of sinking a ship in a non-shipping lane square. The chance of sinking a merchant ship is divided by 5 if the Graf Spee moves during the turn, divided by 1.5 if the visibility is three, and multiplied by 2 if the visibility is one.

9.3 When a British Merchant ship is sunk there is a 50% chance that the ship is able to radio a message giving the location of the Graf Spee.

9.4 The German supply ship Altmark is a non-combat ship which is automatically sunk if sighted by a British ship, unless the Graf Spee is in the same square.

10.0 REFUELING

10.1 The Graf Spee may refuel in any South American port or from the Altmark (if in the same square) by giving a P order.

10.2 All British ships may refuel in any port by giving a P order.

10.3 When refueling, a ship's current fuel level is set equal to its maximum level.

11.0 REPAIRS

11.1 When in port a ship with a P order will repair 0-10% of its current damage (determined randomly). *Example: The Graf Spee repairs while having 40% damage. At the end of the turn it will have between 30-40% damage.*

11.2 Items which may be repaired are:
1) Hull
2) Superstructure
3) A, B, X, Y, turret strength (but not guns), thus a damaged turret can be brought up to full strength, but a destroyed turret may not be rebuilt.

11.3 Each turn a ship with its maximum speed reduced will regain between 0 and 10 knots to its maximum speed.

12.0 NEUTRAL PORTS

12.1 Whenever the Graf Spee enters a South American port (squares 1817, 2016, 2313) the British player is informed of its location. Also, the first time that the Graf Spee enters a neutral port there is a 50% chance that it will scuttle itself. If it does not scuttle itself at that time, it may reenter neutral ports without having to check for scuttling.

12.2 The Graf Spee and the Altmark may be attacked while in port and the Graf Spee may be shadowed when it leaves port.

13.0 AIRCRAFT CARRIER COMBAT

13.1 Whenever an unescorted (no friendly non-aircraft carrier ship in the same square) aircraft carrier is found by the Graf Spee, their is a chance that the carrier will be sunk. The following formula is used to determine the probability of the carrier being sunk:
% chance of being sunk = [(Graf Spee current speed + 15 − carrier current speed) × .33 × visibility level].

13.2 If an aircraft carrier survives an attack (or is escorted and thus is not attacked) it will launch an airstrike at the Graf Spee. Airstrikes will not be launched if the visibility level is 3. The Ark Royal has a 50% chance of scoring a torpedo hit with its airstrike while the Hermes has a 17% chance of scoring a torpedo hit. If a hit is scored the Graf Spee will lose up to a maximum of 6 hull points and 15 knots.

14.0 SURFACE COMBAT (Off-line Combat)

Surface combat occurs whenever non-carrier British ships occupy the same square with the Graf Spee and the Graf Spee has been spotted. Before combat begins the players will be offered the opportunity to resolve the combat off-line (using any method the players desire) or on-line using the tactical game provided by the computer.

14.1 If the players decide to resolve combat off-line they will be asked to input the status of each ship involved in the combat as of the completion of the battle. The following values for each ship must be entered:

1) Number of guns remaining in each turret
2) Strength remaining of each turret
3) Hull points remaining
4) Superstructure points remaining
5) Secondary guns remaining
6) Current maximum speed

Be careful not to enter something illegal (such as adding secondary guns to a British ship) for there is no guarantee that the program will not crash if this is done. After stats for a ship have been entered the player will have a chance to reenter these stats if a mistake has been made. When using the off-line feature, players should take note of the prevailing visibility level when setting up the engagement.

15.0 SURFACE COMBAT (On-line Combat)

15.1 If the players decide not to use off-line combat, the computer will set up the tactical combat game. The following sequence is used during tactical combat:

15.1.1 German order entry phase

The German player will secretly give orders to the Graf Spee by answering a series of questions.

15.1.2 British order entry phase

The British player will secretly give orders to one ship at a time through the answering of a series of questions, until all ships have received orders.

15.1.3 Gunfire and torpedo fire execution phase

All gunfire and torpedo attacks will be resolved by the computer simultaneously with the results given on the screen.

15.1.4 Ship movement phase

The computer will move all ships to their new locations based on the orders given to them and the damage sustained during the preceeding gunfire and torpedo fire execution phase.

15.1.5 Disengagement check

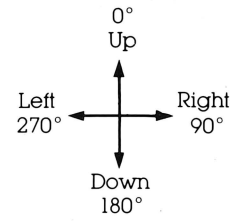
The computer will determine if opposing ships are still within sight of one another and if so will return to step 15.1.1. If no enemy ships are within sight of each other combat will end and the computer will return the players to the strategic game.

15.2 Tactical Combat Setup

Tactical combat is resolved on a x, y coordinate grid system with each point on the grid representing 100 yards and each turn representing 3 minutes.

Compass headings are as follows:

000 = toward the top edge of the computer screen (north)
090 = toward the right edge of the computer screen (east)
180 = toward the bottom edge of the computer screen (south)
270 = toward the left edge of the computer screen (west)



At the beginning of combat, the Graf Spee is placed at coordinate 5000,5000 with a course of 000 degrees and a speed equal to its current maximum speed. All British ships are placed on the board due south of the Graf Spee also with headings of 000 and speeds set to their current maximums. The distance between the British ships and the Graf Spee is determined based on the current visibility level as follows:

Visibility = 1 randomly between 24000 — 28000 yards (240 to 280 x, y points)

Visibility = 2 randomly between 16000 — 20000 yards (160 to 200 x, y points)

Visibility = 3 randomly between 8000 — 12000 yards (80 to 120 x,y points)

15.3 The Order Entry Phase

The order entry phase consists of 4 major questions concerning the ship being ordered:

1) Does the ship wish to change speed?
2) Does the ship wish to change course?
3) Does the ship wish to change the targets its guns are firing upon?
4) Does the ship wish to fire its torpedoes?

Some of these questions may be skipped over if inappropriate to the ship being ordered *(i.e. a ship without torpedoes will not be asked whether it wishes to fire torpedoes),* and some questions may be automatically answered because of some other action taken *(i.e. a ship that changes its course by greater than 30 degrees in the same turn must automatically change its targets so it will not be asked the question)*

15.4 Speed

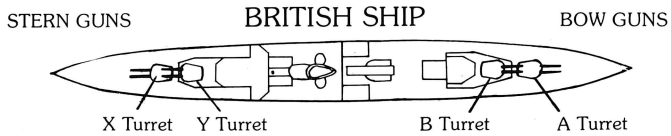
A ship may be given any speed between 0 and its current maximum speed. A ship damaged during combat such that its current maximum speed is lower than its current speed will automatically lower its speed so that it is equal with its current maximum speed. A ship may speed up or slow down at will within the limits given above, however most players will discover that they will in almost all cases desire to travel at their maximum speed (the slower you travel the greater the chance of being hit by enemy fire). For each knot of speed a ship will traverse 1 point on the x, y coordinate grid each turn. *Example: A ship with a speed of 25 knots with a heading of 90 degrees and a location of 0, 0 will end the turn at location 25,0 (assuming it is not slowed down due to damage from enemy fire).*

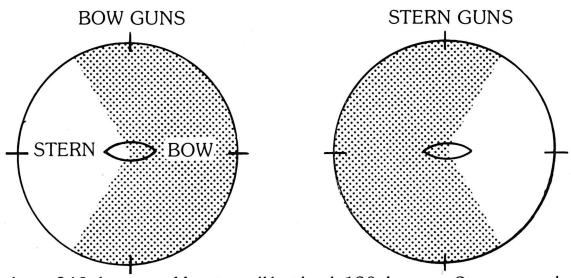
15.5 Course

A ship may be given any course between 0 and 359 degrees. All ships may turn immediately to any course desired. The turn is executed at the beginning of the ship movement phase (as if the ship could turn on a dime). The only penalty associated with drastic course changes is that new targets must be selected whenever a ship orders a new course which is a change of greater than 30 degrees from its previous course. Although the targets fired at may remain the same, the process of choosing new targets causes a new set of ranging shots on the target, thus decreasing the chances of hitting the target during the turn (see selecting targets). Thus players are advised to limit their course changes to 30 degrees or less if possible. A ship sustaining temporary rudder damage may not change course for the duration of the tactical combat.

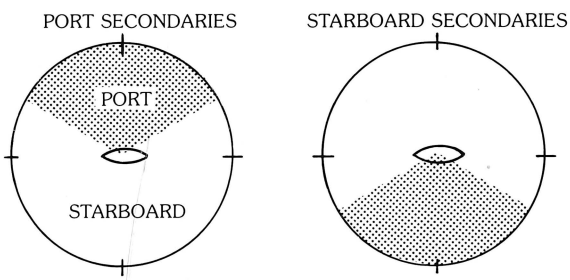
15.6 Selecting Targets

In order to fire its guns, a ship must choose a target for its guns. Each British ship has two sets of guns (bow guns, A + B turrets, and stern guns, X + Y turrets), while the Graf Spee has four sets of guns (bow, stern, starboard secondaries, port secondaries). Each set of guns is treated separately and may be given different targets. Each set has a different firing arc as shown below:





Bow guns have 240 degrees of fire, i.e., all but back 120 degrees. Stern guns also have 240 degrees of fire, i.e., all but front 120 degrees (for British ships and the Graf Spee.)



For Graf Spee only: Starboard secondaries have middle 120 degrees of fire, off right side of ship. Port secondaries also have middle 120 degrees of fire, off left side of ship.

When entering the target desired, the computer will list the code of the current target for the guns being considered, with a 0 if no target currently exists. To enter a target enter the letter ID code of the ship you wish to fire at. If this is an illegal target (guns cannot bear on target or target is out of range, see data card) the computer will ask for another target. If you wish to keep the same target press return. If you desire not to fire press 0. The first turn a ship fires on a target, the fire will be at one third effectiveness, for the ship is considered to be ranging in its guns on the target. On the second and future consecutive turns of firing on the same target the guns will fire at full effectiveness. Whenever a ship changes course by greater than 30°, the computer will eliminate previous targets, requiring the ship to once again range in on enemy ships. If a player states that he does not wish to change targets the computer will check to see whether all current targets are legal targets, and if they are not, the player will be forced to enter new targets. Remember that each set of guns fires independently (one set may be ranging in on a new target while another may be already ranged in on a different target).

15.7 Torpedo Fire

Ships with torpedoes will be given the opportunity to fire torpedoes at enemy ships. Torpedoes may be fired once during each tactical combat *(i.e. they may not be reloaded during combat)*. Torpedoes have a range of 8000 yards with the chance of hitting the enemy reduced at longer ranges and when trying to hit a fast moving ship. If the Graf Spee is firing its torpedoes it will be asked to enter the code of the desired target. A torpedo hit will cause the loss of up to 12 hull points and 30 knots. Torpedo damage to the Graf Spee and Renown is halved.

15.8 Combat Ship Detail Line

When giving orders, a ships characteristics will be displayed on the screen in the following manner:

Name	Hull	Aguns	Bguns	Portsec	Starbsec	Xguns	Ygun	Maxspd	Curspd	Curcourse
G	20	0	3	4	4	3	0	26	26	000

Name = ship id code
Hull = hull points remaining
Aguns = number of guns remaining in A turret
Bguns = number of guns in B turret.
Portsec = number of port secondaries
Starbsec = number of starboard secondaries
Xguns = number of guns in X turret
Yguns = number of guns in Y turret
Maxspd = maximum speed possible
Curspd = current speed
Curcourse = current course

15.9 Possible Responses to Questions

When a major question is asked the computer will allow the following answers:
Y = yes
N = no (return also signifies no)
C = check status of a friendly ship
X = display x, y coodinates of each ship
P = display current speed, course, and range to the Graf Spee of each ship

15.10 Visibility and Disengagement

A ship may not fire at a ship it cannot see. Visibility limits are as follows:

Visibility	Range
1	28000 yards (280 points)
2	20000 yards (200 points)
3	12000 yards (120 points)

Combat will end when no British ship is within sighting range of the Graf Spee.

15.11 Gunfire Combat Resolution (hits scored)

Combat is resolved by first determining the number of hits scored on an enemy ship. The number of hits is determined by the type of gun (guns with less strength fire more often and thus have a greater chance of hitting), the speed of the target (the slower the target is moving the greater the number of hits), the range to the target (the closer the target the greater the number of hits), and the number of guns firing at the target (the greater the number of guns firing the greater the number of hits). The number of hits scored is also affected by the following:

Ranging in on target ship	33%
Visibility = 2	90%
Visibility = 3	80%
Firing ship's fire control center destroyed	67%
Firing ship has temporary rudder damage	67%

These effects are cumulative, thus a ship in visibility 3 with its fire control center destroyed would score only (.8 × .67 = .536) 53.6% of the hits it would have otherwise scored.

15.12 Gunfire Combat Resolution (location of hits scored)

When a hit is scored the location of the hit on the target ship is determined. The following is the breakdown of possible locations of hits based on the range to the target ship:

Location of Hit	Range > 16000 yards	Range < 16000 yards
Superstructure (no armor)	15%	15%
Secondary gun (no armor)	15%	15%
Hull (no armor)	5%	5%
Main turret (no armor)	1%	1%
Hull (belt armor)	14%	30%
Fire control center (belt)	3%	3%
Rudder (belt armor)	1%	1%
Hull (deck armor)	21%	5%
Main turret (turret armor)	25%	25%

The Graf Spee has a 6% greater chance of being hit on the hull deck armor and a 6% lower chance of being hit on the turret armor. Some hits on armor protected hull will also cause the destruction of a turret, while hits on the hull deck armor at greater than 16000 yards and on the hull belt armor at less than 16000 yards have a small chance of hitting a main magazine and sinking the ship.

15.13 Gunfire Combat Resolution (armor penetration)

When the location of a hit is discovered the computer will check to see if the shell penetrated any protective armor encountered. Refer to the data card to see what guns penetrate what armor at what range. If the hit is on the Belt or Deck armor and shell does not penetrate the armor, the hit does no damage to the target ship. If the hit is on the Turret armor and the shell does not penetrate the armor then the strength of a main turret (determined at random) on the target ship is reduced by the value of the gun firing. If the strength of a turret is reduced to 0 the turret is destroyed and the number of guns in the turret becomes 0. *Example: The Exeter scores one hit on the Graf Spee's X turret, but does not penetrate the armor (range greater than 12000 yards), thus reducing the strength of the X turret by 2 points (value of Exeter's guns). If the Graf Spee's X turret strength has been reduced to 1 or 2 then this hit would destroy the turret.*

15.14 Gunfire Combat Resolution (damage caused by penetrating hits)

Hits on the superstructure will reduce the strength of the superstructure by the value of the gun firing. If the superstructure is reduced to 0 then all future superstructure hits reduce the hull. Hits on the secondary guns will cause the loss of one secondary gun. If secondary guns are reduced to 0 then all future secondary hits cause damage to the superstructure. Hits on the hull will reduce the strength of the hull by the value of the gun firing while also causing a reduction in maximum speed of up to 30 knots. It is also possible for the hull to be reduced by more than the value of the gun firing, although the chance of this is never greater than 30%. Hits on a main turret will cause the destruction of the turret. Repeated hits on an already destroyed turret will cause no further damage.

16.0 SCENARIOS

16.1 The December 1 scenario begins with the December 1 AM turn and ends after the December 25 PM turn.

16.2 The December 13 scenario begins with the computer execution phase of the December 13 AM turn and ends after the December 25 PM turn. All ships are considered to be in patrol mode during the first turn of the game. The German player begins with 40 victory points. The Graf Spee is automatically sighted on the first turn of the game.

17.0 VICTORY CONDITIONS

17.1 Victory is determined by comparing victory point totals of both sides at the end of the game and referring to the chart provided below. There are three possible ways in which the game may end.
1) The game ends if the Graf Spee and the Altmark are both sunk or exited from the board.
2) The game ends after the December 25 PM turn.
3) The game ends when a player decides to end the game by giving an E command (this is not an official way of ending the game, and should only be done if both players agree to it).

17.2 The computer records all victory points scored and reveals the totals at the end of the game. Each player receives victory points for sinking enemy ships. Players also receive victory points for damaging enemy ships which are not yet sunk. The following formula is used to allocate victory points for damaged ships:

vp = .005 × % damaged × vp's for sinking

The German player is awarded 20 victory points if the Altmark is exited safely off the north edge of the board (this is done by moving the Altmark north, northwest or northeast while on row 11). The British player receives 5 victory points for each German merchant ship sunk. The German player receives 15 victory points for each British merchant ship sunk west west of column 18 (inclusive) and 10 victory points for each British merchant ship sunk east of column 19 (inclusive). Each player receives one point per turn per enemy ship at sea without fuel.

17.3 The German player begins the December 13 scenario with 40 victory points.

17.4 Victory is decided by subtracting the British victory points from the German victory points and comparing the arrived at total with the following chart:

VP TOTAL	LEVEL OF VICTORY
115 or more	German Decisive
85 to 114	German Substantive
55 to 84	German Marginal
45 to 54	Draw
15 to 44	British Marginal
−15 to 14	British Substantive
−16 or less	British Decisive

18.0 ACKNOWLEDGEMENTS

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19.0 CREDITS

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THE RISE AND FALL OF THE "POCKET BATTLESHIP"

The look-outs of the German "pocket battleship" *Admiral Graf Spee* peered anxiously across the empty sea as they slid past the coast of Iceland on August 24, 1939. War had not yet been declared between Germany and Great Britain, but it was important to Hitler that this new wonder of the German Navy, completed barely three years before, be on post for its duties, should the French and British not bow to Hitler's conquest of Poland.

These "pocket battleships" (three of them had been built) were an ingenious attempt to circumvent the terms of the Versailles Treaty. Those terms had been designed to prevent Germany from constructing any ship capable of doing battle with British battleships — the most awesome weapon afloat in this period. Restricted to 10,000 tons, the German Navy, it was assumed, would not be able to produce a ship more dangerous than a typical cruiser mounting 6-inch guns.

Staying within these limits (and even allowing for "cheating" of 2,000 tons or so) posed a difficult problem for warship designers. To turn loose a German warship mounting only 6-inch (or even 8-inch) armament would be to offer her up to a British Navy of not only 15 capital ships, but a total of more than 60 cruisers. Two or three cruisers, meeting her on the high seas, would constitute a superior force. And while she might be able to stay out of the way of the few battleships which had to be scattered about the world to meet the Empire's obligations, the chance of dodging even a cruiser for a long period of time were slight. Therefore, she would have to be able to intimidate the lighter but faster cruisers — to make them fear battle with a "superior force." But how could one make a ship little bigger than a typical British cruiser so formidable?

The answer of the German ship architects was to design her to carry six mammoth 11-inch guns. With guns nearly as large as those in a standard battleship, firing a shell from two and a half to seven times heavier than those fired by cruisers, and throwing them over 50% further, the pocket battleship would indeed appear to be too much for anything except a dreadnaught itself.

What could the role of such a ship be? It clearly was not intended for general naval engagements. Despite its superiority over cruisers on search missions, it would not stand up for long in a slugging match with the full-scale battleships. Yet it did have a very significant use. Any nation at war with Great Britain would know that the life line to England lay in the shipping lanes to its colonies and allies all over the world. Cut those and mighty England would be as powerless as a fetus whose umbilical cord has been severed. Germany had shown her ability to cause great concern on this point through her U-boats during World War I — and she was gearing up to an even greater effort with the same weapon again. But if a ship like the *Admiral Graf Spee* could sneak out into the open Atlantic, there to prey on the merchant ships so vital to England's support, a new danger would be added for Germany's enemy to surmount. For the pocket battleship could strike quickly at any merchant ship she met, send her to the bottom, speed off into the vast emptiness of the Atlantic, and then appear suddenly in another shipping lane, far from the first. And unlike the U-boat, so vulnerable to any armed surface ship, the *Graf Spee*, if she were discovered by almost any type of ship she would be likely to meet, would know that she herself would be the superior in battle — should it come to that. While her main purpose would not be to seek combat, her 11-inch guns would be enough to assure her escape if a battle were necessary. For any inferior ship could be quickly pulverized by those two turrets of weapons nearly twice as big as those of a 6-inch cruiser.

Central to the whole plan, of course, was providing the necessary supplies (especially the oil) while at sea, for each voyage home through the heavily patrolled waters of the North Sea would be a touch-and-go proposition. But that problem had already been solved. As early as August 6 the *Altmark*, a German supply ship, had sailed openly past the Dover cliffs and on out to sea. Her progress was noticed and forgotten. She clearly was not a warship. She had steamed on to her first port of call — Port Arthur on the Gulf of Mexico. There she had finished her preparations by loading all the oil she could carry. Now she was heading eastward toward a secret rendezvous.

The stage had been carefully set. Then, on September 26, after it had become clear to Hitler that the French and British would not accept a peace acknowledging Germany's conquest in Poland, the orders came through. The *Graf Spee* was "to begin the destruction of enemy merchant shipping by all possible means." Now for the first time a pocket battleship would have a chance to prove what she could do in a real war.

It was an elaborate cat-and-mouse game. The German ship would search for a merchant ship, then, adopting various disguises, would attempt to approach it without awaking suspicion. Once close enough to threaten the prey with immediate destruction if the command was not obeyed, she would order that no radio transmission be sent. If everything worked perfectly, a prize would be caught and sunk, and the hunter would be reasonably safe in staying in the same area to look for another victim. If a distress message was sent, the *Graf Spee* could dispatch its prey and then race for some far distant part of the Atlantic to start the game anew.

Her first prize came quickly — just four days after the orders had come to open operations. It was the tramp steamer *SS Clement*, intercepted less than a hundred miles off the coast of Brazil. The merchant ship was sunk after all the crew had taken to the boats — but not before a distress message had been sent. Captain Hans Langsdorff, commander of the pocket battleship, therefore decided to head for the other side of the Atlantic. About two-thirds of the way to the African coast, a second ship, the *SS Newton Beach,* was encountered and captured on October 5. Once again, however, a radio message was transmitted. This time it was relayed to *HMS Cumberland*, but her commander decided not to break radio silence to pass it on. Thus was an early chance lost by the Royal Navy.

Between October 7 and 22, three more ships were caught in the same general area before another radio message was sent by the intended victim. Realizing he might soon be discovered, Captain Langsdorff made a wise decision, steaming completely around the Cape of Good Hope into the Indian Ocean. There he met and promptly dispatched the small *SS Africa Shell.*

Having been out of the Atlantic for nearly a month, Captain Langsdorff came back to the rich hunting grounds of the South Atlantic. There, on December 2, he came upon the 10,086-ton *SS Doric Star* near the west coast of Africa. It was a rich prize — but the German ship had made the mistake of opening fire at too long a range, giving the merchantman opportunity to get off a message of its predicament before being captured.

Captain Langsdorff knew he must change his area of operations again. This time he decided to head across the Atlantic for the River Plate area off the northern coast of Argentina. On the way he met and sank, the very next day, the *SS Tairoa* — which, however, also managed to transmit a message before being overpowered. Then, halfway to her destination, the *Graf Spee* met another ship — the final one, it was to be — and

sank her on December 7.

All this time the pocket battleship had met periodically with its support vessel, the *Altmark,* to take on fuel and supplies. Everything seemed to be working perfectly — just as it had been planned. In the time between September 30 and December 7, the *Admiral Graf Spee* had sunk over 50,000 tons of Allied shipping. To the credit of Captain Langsdorff, it should be added that in this destruction not a single life had been lost — all crews had been successfully removed from each ship before it went down. But those last two sinkings — and their radio messages — were to turn out to be crucial. The British Navy at last had something specific to go on.

The Royal Navy had not been idle for these three and a half months, Early in September eight "hunting groups" had been set up by the British and the French to track down whatever German raiders were loose on the high seas. It was not an easy task. With the thousands of square miles of empty seas to cover and solid information on the enemy's whereabouts slight and almost always woefully outdated, the search was often little better than a blind game of chance.

But the commander of the "Force G" hunting group had a hunch he decided to play. Commodore Henry "Bobby" Harwood, in command of the 8-inch cruisers *Exeter* and *Cumberland* and the 6-inch cruisers *Ajax* and *Achilles,* had been patrolling the waters of the South Atlantic off the South American coast when he received word of the *Doric Star's* radio message of distress. He was three thousand miles from the site of the sinking far to the east, but he was quite certain that before long the German raider would make for the heavy traffic of the South American coast. He was forced to reduce his power by more than a quarter by sending the *Cumberland* to Port Stanley for refitting. But this left him with three cruisers, one with 8-inch guns, and he felt he was still strong enough for action against the raider.

Commodore Harwood estimated that the raider which had sunk the *Doric Star* would be heading for the southeast coast of South America, and that he would arrive at the River Plate area (about halfway up this coast) by December 13. Therefore he decided to concentrate his three ships about 150 miles off the mouth of the River Plate. Sure enough, at about six o'clock on the morning of the 13th, his look-outs spotted smoke. A short while later Captain F. S. Bell, commander of the *Exeter*, signalled the news. It was, he thought, "a pocket-battleship." The long-sought battle was about to begin.

Captain Langsdorff had two choices. He faced not one but three cruisers — each decidedly inferior to his ship in power, but with a seven-knot advantage in speed. His first possibility was to turn and run. The faster cruisers could eventually overhaul him — but he could use his longer-range guns to pummel each of them while they would be desperately trying to get into range to fire. The only problem was whether he would run out of the heavier ammunition before he could sink all three at such long ranges, where his shells would have less hitting power. His second choice was to race toward the cruisers firing his 11-inch guns, truly devastating weapons as the range shortened. This would make for a far shorter and more decisive battle — and it was the one he chose.

The British commander had already made *his* choice and communicated it to his ship captains earlier. Against one pocket battleship he had ordered that the three ships attack immediately in two divisions, the larger *Exeter* moving to one side while the smaller *Ajax* and *Achilles* maneuvered to get to the other. Thus the British ships would not only force the more powerful Graf Spee to consider dividing the fire of its 11-inch guns, but also allow one division to spot the shells of the other.

This plan was immediately put into effect. Langsdorff had changed course to shorten range at 0600. By 0615 the range was down to 20,000 yards and he opened fire. Five minutes later the *Exeter* responded with her 8-inch guns. At 0621 the *Ajax* began to fire with her 6-inch guns, and the *Achilles* at 0623. The range was long for these smaller guns, but they were beginning to come into the planned positions and diminishing the range with every minute.

The *Graf Spee* aimed both her 11-inch turrets at the larger target, whose shells were far more powerful than those from the smaller 6-inch guns. Hits were not long in coming. At 0632 the *Exeter* took a burst close enough to cause many casualties and considerable damage to her communications system. Then, within a minute, a second 11-inch shell burst directly on "B" turret, putting both its guns out of action. In some ways more important was the damage the burst did to the bridge. There only three men were left who were neither killed nor wounded. Fortunately one of the three was Captain Bell. But the ship's communications system had been knocked out and the *Exeter* was no longer in control.

The men at the other conning tower took over without orders, bringing the ship back in control. Captain Bell made his way to the aft conning tower to continue the fight. Finding these communications also cut, he improvised a chain of men for relaying shouted orders, and in a remarkably short time the ship was back in the fight.

The *Ajax* and the *Achilles,* spared the fire from the 11-inch guns during this time, were getting close enough for their guns to have some effect. The secondary 5.9-inch guns of the *Graf Spee* were used against them, but not effectively. Captain Langsdorff thus felt compelled to turn his 11-inch guns against the smaller targets.

But now the *Exeter* had also tasted blood. One of her 8-inch shells struck the *Graf Spee's* control tower. She also fired torpedoes from her starboard tubes. Langsdorff, first laying down a smoke screen, decided to turn away. The range was too long for the torpedoes, and the pocket battleship easily maneuvered away from them. Then a second shell from the *Exeter* struck home. But the German ship had now turned its big guns back to the *Exeter*, which shortly thereafter received two direct hits, knocking out the "A" turret, starting a hot fire amidships, and leaving her without a regular compass to steer by. She was almost a sitting duck — except that she had one turret still operating, and although another hit in her bow left her with some flooded compartments, she still could make nearly full speed. So she stayed in the fight. There was some relief for her now, for the *Graf Spee* was receiving hits from the *Ajax* and *Achilles* which, though too small to penetrate her armor, still caused many casualties to her deck crews and damage to her superstructure. Captain Langsdorff had now clearly decided to turn away and engage only at long range.

Hardly twenty minutes had gone by since the beginning of the fight. But now the *Graf Spee* was racing away at its best speed, with the British ships following. It was not till nearly an hour later, at 0729, that an electricity failure put the *Exeter's* final turret out of action, and only then did she drop out of the battle.

Meanwhile, in the running fight, with the range down to 11,000 yards at 0720, the *Graf Spee* had turned back under a smoke screen and straddled the *Ajax* with shells from her 11-inch guns. The *Ajax* maneuvered into position and fired, scoring hits which set a fire in the midships area of the pocket battleship. Then, a few minutes later, one of the huge 11-inch shells knocked out two entire turrets on the *Ajax.* At this time Harwood was informed that ammunition was running low on the British ships still in the fight. The *Ajax*, furthermore, had had further damage, losing a main topmast with the W/T aerials. Thus, at 0740, the British commander had decided to lay smoke and break off the fight till after dark.

All day the *Graf Spee* steamed west. Captain Langsdorff had decided to take refuge and repair damage at the neutral port of Montevideo. That evening the pocket battleship anchored at its destination. The two British ships followed. As soon as it was apparent that the German ship was going to take refuge rather than continue the fight, Harwood sent word to the *Cumberland* to join him at the River Plate area. Other British ships,

including a battle-cruiser and an aircraft carrier, were dispatched to add to the British force bottling up the enemy.

International law allowed a ship at war to stay in a neutral port for only 24 hours — unless more time were needed for repairs to make the ship seaworthy. After much bargaining, the Germans were allowed an extra 72 hours. Captain Langsdorff saw no way out. He thought the British force had already been too heavily augmented for him to break his way out. So, with the permission of the Fuhrer himself, he decided to scuttle his ship rather than have it captured or sunk with great loss of life.

Therefore, on December 17, the much-feared pocket battleship steamed out a short way toward the open ocean, and at 2000 hours her captain sent her to the bottom with her own explosives. A short time later, blamed by much of the public for the loss of his ship, Captain Langsdorff sat down, wrote three letters, wrapped himself in a German naval ensign, and with his revolver ended his life.

The awesome pocket battleship had gone down, defeated by three smaller and less glamorous ships, whose commanders and crews had persisted despite serious losses. The *Exeter* had lost 61 officers and men and had 23 wounded. The *Ajax* and the *Achilles* together had 11 killed and 5 seriously wounded. The *Admiral Graf Spee* herself had had only 36 killed and 6 seriously wounded. But she had lost, in the end, despite her technical marvels, her young and patriotic crew, and her chivalrous but unlucky commander. The day of the pocket battleship had come and gone swiftly.

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